

Verdi Business Park Water Co Op

Water Conservation Plan

January 2011

Prepared for:

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Introduction

The water supply in Nevada is a precious commodity and plays an important role in determining Nevada's future. Nevada is the one of the driest states in the nation as well as one of the fastest growing. Nevada's future, both from an economic and a quality of life view, depends heavily upon the wise management of water resources.

Groundwater, in general, provides about 40 percent of the total water supply used in Nevada. In some areas, groundwater provides the entire water supply. Groundwater usage may vary considerably from year-to-year as it is sometimes pumped to supplement surface water sources.

Water use in Nevada can be classified as:

- Domestic (household, both indoor and outdoor) – Met by public supply or private supply (e.g. wells).
- Commercial (businesses) – Met by public supply or private supply (e.g. non-community systems).
- Industrial (manufacturing/construction) – Met by public supply or private supply (e.g. non-community systems).
- Thermoelectric (electric/fossil fuel/geothermal power generation) – Met by public supply in a minor fraction.
- Mining (mining processes) – Supply source varies widely from operation to operation and is dependent upon the mineral being recovered and the recovery process employed.
- Irrigation (land use) – Met by self-supplied or supplied by irrigation companies or districts.
- Livestock (farm needs) – Supply source varies.

While all classifications of water usages have shown an increase over the years, it has historically been irrigation water use which has accounted for the majority of the water use in Nevada.

It has been estimated that domestic water use accounts for less than 15 percent of the water used in Nevada, but this is expected to rise to nearly 25 percent as the population increases (based upon existing water use patterns and conservation measures). It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

It is vitally important that all residents understand the fundamental science of water, how it is managed in the state, and the issues affecting its management. Water education must become a priority and must include education of children as they are our future.

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Because Nevada does not have a comprehensive state-wide conservation program, it is reliant upon the individual water suppliers for developing their own conservation programs. In 1991, Nevada enacted a law requiring adoption of conservation plans by water suppliers. Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

Conservation is an essential part of ensuring adequate water supply as it is no longer feasible to develop new sources. It has proven to be a cost-effective way to reduce demand and/or to extend a given water supply. It can easily be pursued by all water users regardless of the water system type. Key to evaluating the program's effectiveness is the water use measurement (through meters and other measurement devices). Various conservation measures can be put into place and the achievement of the goals set with these measures is vital to combating the expected increase in water usage.

Statutory Requirements

This water conservation plan was prepared for the **Verdi Business Park Water Co Op** in accordance with Nevada Revised Statute (NRS) 540. As outlined in NRS 540.141, the provisions of this plan must include:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measurements
- g. Conservation Estimates

In addition to the provisions of the water conservation plan, listed above, NRS 540.141 also requires a rate analysis to be performed and included with the submittal.

This plan is being submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by the **Verdi Business Park Water Co Op**, as required by NRS 540.131.

This plan is available for inspection during normal business hours at 2557 Old Highway 40 Verdi, NV 89439 located at the office.

This plan will conform to all public notice requirements as found in NRS 540.

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The original Water Conservation Plan for the **Verdi Business Park Water Co Op** was developed on **November 3, 2010**. This is the original Water Conservation Plan.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, January 2016.

System Description

The **Verdi Business Park Water Co Op** is a privately-owned Commercial/Industrial/Agricultural (landscaping) Non-Transient, Non-Community water system and has a current water operation permit, NV0005061. As a cooperative, the **Verdi Business Park Water Co Op** is jointly owned by all owners within the Business Park and run for the benefit of each owner. The **Verdi Business Park Water Co Op** serves water to 16 metered customers in its service area in Verdi, which is located in Washoe County. One (1) lot is currently vacant. The service area boundaries are Old Highway 40 to the northeast, Interstate 80 to the south, and Southern Pacific Railroad to the southwest which intersects with Interstate 80 and Old Highway 40. The Cooperative covers approximately 17.6 acres. The service area's terrain is flat and generally sloping in a westerly direction.

The estimated population served in 2010 was 85 people. The **Verdi Business Park Water Co Op** has one vacant lot remaining to be developed. Once this lot is developed it is anticipated to add approximately 15 additional people, or a 17% increase. There are no plans to develop any additional lots. The State of Nevada, through its State Water Plan, estimates the population growth for Washoe County through 2020 to be 1.79% annually.

Water is supplied from a groundwater well which is located within the Truckee River Basin (Hydrographic Basin #6) in the Truckee Canyon Segment Groundwater Basin (Administrative Groundwater Basin #91). There is a total of one (1) well supplying the system and a total of two (2) bolted steel storage tanks. Each of these is identified in the tables below (**Table 1** and **Table 2**). The storage tanks are located on property leased from Truckee Meadows Water Authority on a hill approximately 200 feet above the supplied area. From the storage tanks the entire system is gravity fed. The well was installed in 1979 by Paul Williams originally to a depth of 195 feet, below ground surface (ft, bgs) with 6 5/8-inch diameter casing and perforated from 140 to 160 ft, bgs and 180 to 200 ft, bgs. The well was deepened in 1989 by Agua Drilling and Well Services to 365 ft, bgs with perforated casing from 325 to 365 ft, bgs. In 1995 the well was deepened a second time by Aqua Drilling and Well Services to 463 ft, bgs. The pumping rate of the well varies seasonally, minimum pumping rates in the fall are around 12 gallons per minute (gpm) and maximum pumping rates in the late winter are around 28 gpm.

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Table 1 – Source of Supply

Well No.	Depth (feet)	Production (gpm)
Well 1	463	Minimum 12 (Fall) Maximum 28 (Late Winter)

Table 2 – Storage Tanks

Tank No.	Volume (gallons)
ST 01	120,000
ST 02	120,000

The **Verdi Business Park Water Co Op** has been granted water rights in the total amount of 6.14 acre feet per year. Applications # 39291 have been certified. The current water rights are listed in the table below (**Table 3**).

Table 3 – Water Rights

Application (Certificate No.)	Well No.	Rate of Diversion	Annual Use
39291 (14902)	1	50 gpm	6.14 acre-feet
62168	1		
63330	1		1.0 acre-feet
64967	1		2.89 acre-feet

Water is pumped from Well 1 into an 8-inch diameter pipeline which either fills the tank or is distributed directly to the customers. From the well to the storage tanks there are approximately 240 feet of 8-inch pipeline which crosses beneath Old Highway 40 and then increases to a 12-inch pipeline which enters the tank. Water is distributed to customers in PVC C900 Class 150 pipeline with varying diameters ranging from 8-inch to 10-inch.

The **Verdi Business Park Water Co Op** requires, at a minimum, a D1 operator. Operations are contracted out to Collins Engineering (Reno, NV) and to subcontractor SPB Utilities (Reno, NV) who is responsible for all sampling. Collins Engineering currently holds certifications of D3 and T4 for Nevada. SPB Utilities currently holds certifications for D3 and T3 for Nevada.

SPB Utilities is subcontracted to perform monitoring and testing of water quality as follows:

Quarterly: Total Coliform, Arsenic

Annually: Nitrates

Every 3 Years: Lead, Copper, Nitrites, Secondary Inorganic Chemicals (IOCs), Fluoride, Volatile Organic Chemicals (VOCs) phase 2, and VOCs phase 5

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Every 9 Years: IOCs phase 2, IOCs phase 5, Cyanide, Synthetic Organic Chemicals (SOCs) phase 2&5.

Collins Engineering performs weekly distribution system monitoring, records well production, hours run, and on/off cycles of the pump. Collins Engineering also performs monthly storage tank monitoring.

The **Verdi Business Park Water Co Op** currently has an outstanding water quality issue with Arsenic exceedance of the maximum contaminant level. They are in the process of developing solutions in collaboration with Truckee Meadows Water Authority. They also need to increase their water storage to meet fire flow and duration requirements of at least 2500 gpm @ 20 psi for 2 hours (at least 300,000 gallons).

The last sanitary survey performed by the Washoe County District Health Department was completed on August 16, 2010 and shows five (5) deficiencies with the system. These deficiencies were a 1-inch diameter hole in the top of the well casing, the north storage tank is improperly bolted to its foundation, lack of a means to indicate water level in both the north and south storage tanks, lack of a locked hatch for security in the north storage tank, and lack of a ladder on the south tank. According to the sanitary survey **Verdi Business Park Water Co Op** is in compliance with all other requirements of NAC 445A governing public water systems and is current with all water quality sampling requirements. All of these deficiencies have been addressed with the exception of the storage tank bolted to the foundation. The 1-inch hole was fixed in the well, site gauges were installed on both storage tanks to read water levels, both storage tanks are locked for security, and a ladder was installed on the south tank. Discussions have been made with the original contractor who installed the storage tank regarding securing the tank to the foundation, and the storage tank was improperly installed from the beginning. The storage tanks may be replaced in the near future which would alleviate the problem.

The **Verdi Business Park Water Co Op** has a flat rate for basic operations with the exception of utility cost. Utility costs are shared based upon customer water usage. Consumers are charged based on the quantity of water used, but this rate does not increase with increased usage. The Cooperative does not have a tiered rate usage fee. A breakdown of the customer type, number, and charge is found in the table below (**Table 4**).

Owners are billed once per year and charged a base rate which covers the next year's expenses. They are charged a usage rate based on the prior year's water usage and electrical expenses. Fees vary yearly based upon operations and water usage. For 2009 commercial owners were billed a monthly service fee of \$237.67 in addition to a quantity fee of \$1.41/1000 gallons. The fees for 2009 are detailed in the table below (**Table 4**).

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Table 4 – 2009 Commercial Customers and Usage Charges

Meter Size	Number	Monthly Fee	Quantity Fee (\$/gallon)
Commercial			
1.5-inch	16	\$237.67	\$1.41/1000 gallons

Wastewater collected from the service area is collected and sent to the Truckee Meadows Water Reclamation facility.

Current water rates are established annually depending on the budget which is determined in December. Water rates are reviewed every December.

Plan Provisions

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, January 2016.

The **Verdi Business Park Water Co Op** is a cooperative therefore each customer is an owner of the water system, and water issues, including quality and quantity, are discussed at every board meeting. The Board will be responsible for implementation of conservation programs, monitoring of water use, and will review /revise the conservation plan when needed.

In an effort to promote voluntary conservation and aid in Nevada's future, the **Verdi Business Park Water Co Op** will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, the **Verdi Business Park Water Co Op** will enact the measures found in the *Contingency Measures* section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measures
- g. Conservation Estimates

Each provision is discussed below.

Public Education

Public education is a key for cooperation with conservation efforts. The **Verdi Business Park Water Co Op** recognizes this and plans to meet quarterly to address various water system issues, including water conservation, and to maintain an awareness of the water system. Because each customer is an owner of the water system, owners have a vested interest in the well-being of the water system and in reducing the costs of water production and system maintenance. For this reason board meetings are well attended by owners and meetings serve as the primary means of education and increased awareness. During meetings owners will be involved in water conservation discussions and made aware of conservation measures the Cooperative can be realizing. It is the goal of the **Verdi Business Park Water Co Op** to increase owner's awareness to conserve water, encourage reduction in lawn sizes, encourage the use of climate-appropriate plants, encourage the use of drip irrigation and encourage conscious decisions for water use.

The conservation education program is primarily verbal and interactive, but may include education materials such as bill inserts, pamphlets, flyers, and posters to the extent possible with the preferred method being dispersion via email to reduce printing and paper waste. Collins Engineering uses a one-on-one approach with the customer to directly discuss water conservation measures. This has already proven to be effective prior to the development of this plan with owners adjusting timers on drip irrigation and implementing other water savings measures. Educational information will be provided to all customers upon request and should include an explanation of all costs involved in supplying drinking water and demonstrate how the water conservation practices will provide water users with long-term savings. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B).

Customers should also be able to read and understand their water bills. Bills should be informative, going beyond the basic billing information. Bills should include comparisons to previous bills and tips on water conservation that can help customers make informed choices about their water usage. Bill inserts can also include this information.

Conservation Measures

In an effort to promote conservation and voluntarily conserve water, the **Verdi Business Park Water Co Op** is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

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- 1) Use of water through any connection when the **Verdi Business Park Water Co Op** has notified the customer personally to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 6) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 7) Use of water for more than minimal landscaping in connection with any new construction.
- 8) Use of water for outside plants, lawn, landscape, and turf areas:
 - a. Under the City of Reno's AC Part 2 Title 12.14- even addresses Tuesday, Thursday and Saturday and odd addresses Wednesday, Friday, and Sunday. Unlawful to utilize water for irrigation of lawns after Memorial Day holiday weekend through the Labor Day holiday weekend between the hours of Noon and 6:00 p.m. Watering is most beneficial between the hours of 4:00 am and 10:00 am.
- 9) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 10) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 11) Service of water by any restaurant except upon the request of the patron.

In the event these conservation measures are insufficient to control the water shortage, the **Verdi Business Park Water Co Op** may implement the mandatory measures discussed in the *Contingency Plan* section below.

The **Verdi Business Park Water Co Op** also promotes the development of water conserving principles into the planning, development, and management of new landscape projects such as building grounds. Customers are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Customers are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices. All owners currently utilize drip irrigation for non-lawn irrigation.

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The **Verdi Business Park Water Co Op** is directly affected by water conservation measures financially. Owners are positively encouraged to reduce water use through transparency and sharing of water usage data per facility at board meetings. There is incentive because the costs of water usage are reduced as each owner does their part to decrease their facilities' water consumption.

Water Management

The **Verdi Business Park Water Co Op** monitors and records water levels at the well and tank sites on a monthly basis. A well sounder is used to measure the static water level in the well, and each tank is equipped with an outside site gauge that is used to monitor water levels in each tank. The well pump turns on/off automatically. The **Verdi Business Park Water Co Op** is looking into upgrading to a SCADA system. Currently, when water levels are low the initial detection is usually identified by a customer who calls Collins Engineering. Collins Engineering then examines the entire distribution system to detect the leak and initiate corrective action as appropriate.

Verdi Business Park Water Co Op currently does not have any mutual agreements with nearby utilities because the infrastructure is not in place. **Verdi Business Park Water Co Op** relies on local contractors to fix problems as they arise.

The **Verdi Business Park Water Co Op** actively monitors for unaccounted for water losses on a monthly basis. Production versus sales and authorized usage allows the determination of unaccounted for water losses. Current-to-historical comparisons are examined and evaluation methods are examined to locate leaks, if significant differences are found.

Verdi Business Park Water Co Op does not have a formal leak detection program. Collins Engineering has identified the water meters as one reason for the unaccounted for water. The meters are not registering low-flow quantities which may be resulting in the majority of unaccounted for water. Depending on the outcome of the Preliminary Engineering Report currently being prepared and progress with Truckee Meadows Water Authority regarding consolidation water meters may be reduced to $\frac{3}{4}$ inch from the current $1 \frac{1}{2}$ inch meter to accurately record low flows.

Verdi Business Park Water Co Op water system does not have water pressure problems. The water pressure is usually around 90 psi.

The **Verdi Business Park Water Co Op** does have a formal well head protection program and a formal Source Water Program Public Water System Assessment Report was prepared in January 2005. The assessment showed that no potential contaminant sources are near the source and no recommendations were included.

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The **Verdi Business Park Water Co Op** has not implemented a formal meter replacement program for all meters that are not registering properly, but a program is currently under consideration. Collins Engineering has identified the meters as one of the reasons for the unaccounted for water and is proposing a replacement program to the board.

A capital improvement plan is in place, and is currently being funded through rates. There are plans to replace distribution lines at their anticipated useful life depending on the Preliminary Engineering Report. The plan includes obtaining an additional water supply source by interconnection with Truckee Meadows Water Authority, replacing lines and increasing storage to meet fire flow and duration requirements.

The **Verdi Business Park Water Co Op** does not have a system for reusing of effluent. Effluent is treated at the Truckee Meadows Wastewater Reclamation facility. There are currently no plans to reuse effluent.

The **Verdi Business Park Water Co Op** facility has buildings which are in the jurisdiction of Washoe County and buildings which are within the City of Reno limits. Washoe County has not adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. The Washoe County Building and Safety Department checks all new construction, renovation, and expansions within Washoe County to ensure compliance with National Plumbing Codes and Standards. The City of Reno has adopted Administrative Code Part 2 Title 12.14 pertaining specifically to Water Conservation (<http://library.municode.com/index.aspx?clientId=14160&statId=28&stateName=Nevada>). Under this Code the waste of water is prohibited.

Contingency Plan

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

The **Verdi Business Park Water Co Op** plans for drought response would be three (3) stages of drought response: (1) warning stage, (2) alert stage, and (3) emergency stage. The stages are describes as follows:

In Stage 1, the warning stage, the **Verdi Business Park Water Co Op** would increase monitoring of its water supplies and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary.

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Retrofit kits (low-flow faucet aerators, low-flow showerheads, leak detection tablets, and replacement flapper valves) can be made available and can be actively distributed, if needed.

In Stage 2, the alert stage, the **Verdi Business Park Water Co Op** would call for wide-based community support to achieve conservation, limit the use of fire hydrants to fire protection uses (by requiring effluent for construction and dust control purposes), implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

In Stage 3, the emergency stage, the **Verdi Business Park Water Co Op** would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, implement allocation of water (rationing), and impose higher fees for water usage. Media relations would be activated in order to inform the customers and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory, rationing would be imposed, violations would incur fines, and over-use would be penalized by higher rates.

When a drought is declared over, voluntary conservation measures (see *Conservation Measures* section) will be reinstated and water supplies would continue to be monitored.

Schedule

All of the provisions listed will be placed after the approval of this plan.

Approximately 16 or 100% of services are now metered. Meters in place are now being read monthly.

Evaluation Measurements

Verdi Business Park Water Co Op is in the process of gathering concrete data. One full year of data will be available in January 2011. It is anticipated that this Water Conservation Plan will be approved and take effect in January 2011. Therefore, the 2010 data will serve as a baseline audit to evaluate the conservation measures that will take effect January 2011.

Additional audits will then be done every year thereafter. Results from the initial audit will be compared with those of the subsequent annual audits in order to serve as a baseline and determine the effectiveness of the measures/incentives.

As a plan element is activated (e.g. Fix a Leak Week or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's

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effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

Usage amounts measured will include summer use, average use per connection, and per capita use. If there is a decrease in usage as a result of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued and a new one can then be implemented to take its place.

In addition to changes resulting from audits, updates, and modifications to conservation measures/incentives there will be changes made to meet changing conditions (e.g. customer growth and demand, changing use, new technologies, etc.).

Conservation Estimates

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 2.5 – 5.0% reduction in water use, or 2.5 - 5.0 gpcpd.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5 - 7.5% reduction in water use, or 5.0 – 7.5 gpcpd.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 7.5 - 15% reduction in water use, or 7.5 - 15 gpcpd.

The estimated water savings for various end-user efforts can be found in Appendix C.

Rate Analysis

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

At this time the **Verdi Business Park Water Co Op** does not anticipate any further water conservation savings due to a change in rate structure. Due to the small size of the Cooperative it is not anticipated that a tiered rate structure will yield additional water savings. The **Verdi Business Park Water Co Op** will continue to monitor the water usage and will re-visit this issue each time rates are reviewed. If so warranted, a change in rates will occur and this conservation plan will be updated to reflect the new rates.

Appendices

APPENDIX A: CONSERVATION MEASURES

Stage 1 – Warning Stage

1. The **Verdi Business Park Water Co Op** would increase monitoring of water supplies.
2. The **Verdi Business Park Water Co Op** would begin creating public awareness of the water supply situation and the need to conserve.
3. The **Verdi Business Park Water Co Op** would inform customers of voluntary conservation measures (non-essential water uses, listed below).
4. The **Verdi Business Park Water Co Op** would provide customers with retrofit kits either at cost or free.

Non-essential water uses are:

- 1) Use of water through any connection when the **Verdi Business Park Water Co Op** has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 6) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 7) Use of water for more than minimal landscaping in connection with any new construction.
- 8) Use of water for outside plants, lawn, landscape, and turf areas:
 - a. Under the City of Reno's AC Part 2 Title 12.14- Even numbered addresses watering on Tuesday, Thursday and Saturday and odd numbered addresses watering on Wednesday, Friday, and Sunday. It is unlawful to utilize water for irrigation of lawns after Memorial Day holiday weekend through the Labor Day holiday weekend between the hours of Noon and 6:00 p.m.
Watering is most beneficial between the hours of 4:00 am and 10:00 am.
- 9) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 10) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 11) Service of water by any restaurant except upon the request of the patron.

Stage 2 – Alert Stage

1. The **Verdi Business Park Water Co Op** would set conservation goals and call for wide-based community support to achieve those goals.
2. The **Verdi Business Park Water Co Op** would inform customers of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. The **Verdi Business Park Water Co Op** would inform customers of penalties if mandatory conservation measures are not observed (penalties are listed below).
4. The **Verdi Business Park Water Co Op** would inform customers of mandatory conservation water fees.
5. The **Verdi Business Park Water Co Op** limit the use of fire hydrants to fire protection uses only.
6. The **Verdi Business Park Water Co Op** would provide customers with retrofit kits either at cost or free.

Penalties for violation of mandatory conservation measures are:

- 1st violation – written warning.
- 2nd violation – \$25.00
- 3rd violation – \$50.00
- 4th violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Stage 2 water rates would be **1.5** times the normal quantity rate, or as deemed necessary.

A flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 22,800 gallons/month. The flow restrictor may be removed only by the **Verdi Business Park Water Co Op**, only after a 30-day period has elapsed and only upon payment of the appropriate removal charge of:

<u>Connection Size</u>	<u>Removal Charge</u>
5/8-inch to 1-inch	\$ 25.00
1-1/2-inch to 2-inch	\$ 50.00
3-inch and larger	\$ Actual Cost

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

Stage 3 – Emergency Stage

1. The **Verdi Business Park Water Co Op** would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. The **Verdi Business Park Water Co Op** would set rationing benchmarks for each customer class.
3. The **Verdi Business Park Water Co Op** would inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. The **Verdi Business Park Water Co Op** would inform customers of penalties if prohibited measures are not observed (penalties are listed below).
5. The **Verdi Business Park Water Co Op** would inform customers of rationing water fees.
6. The **Verdi Business Park Water Co Op** would limit the use of fire hydrants to fire protection uses only.
7. The **Verdi Business Park Water Co Op** would provide customers with retrofit kits either at cost or free.
8. The **Verdi Business Park Water Co Op** would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Penalties for violation of prohibited water use measures are:

- 1st violation – written warning.
- 2nd violation – \$50.00 fine
- 3rd violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Rationing benchmark is set at 760 gpcpd.

Stage 3 water rates would be **2** times the normal quantity rate, or as deemed necessary.

A flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 22,800 gallons/month. The flow restrictor may be removed only by the **Verdi Business Park Water Co Op**, only after a 30-day period has elapsed and only upon payment of the appropriate removal charge of:

<u>Connection Size</u>	<u>Removal Charge</u>
5/8-inch to 1-inch	\$ 25.00
1-1/2-inch to 2-inch	\$ 50.00
3-inch and larger	\$ Actual Cost

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If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify the **Verdi Business Park Water Co Op** in writing, explaining in detail the reason for such a variation. The **Verdi Business Park Water Co Op** shall respond to each request.

APPENDIX B: PUBLIC EDUCATION MATERIALS

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Internet Resources

There are several publications available for use at U.S. EPA website for general distribution (currently located at <http://epa.gov/watersense/pubs/index.htm#ideas>). These publications include such topics as:

- Simple Steps to Save Water,
- Ideas for Residential,
- Ideas for Commercial,
- Ideas for Industry,
- Using Water Wisely In the Home,
- Outdoor Water Use in the US,
- Toilet Flush Facts,
- Watering Can Be Efficient,
- Irrigation Timers for the Homeowner, and
- Water Efficient Landscaping,

These publications can be utilized until the **Verdi Business Park Water Co Op** develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: <http://www.wateruseitwisely.com/100-ways-to-conserve/index.php>. Customers can be directed to this website for tips to conserve water.

Tips for Landscaping

Specific tips for landscaping that can be provided to the customers are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

Watering:

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of watering needed in your area.

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- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

Planting:

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

Maintaining:

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering, and promotes new growth which will also need additional watering.

Ornamental Water Features:

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

Fix a Leak Week

Fix a Leak Week is a nationally promoted week, usually in March, dedicated to saving water by educating consumers on how to fix leaks in their own buildings. Many water utilities hold workshops teaching customers/owners how to detect and fix leaks which can save water systems thousands of gallons of water per year. There are a few means to use to ascertain if your plumbing has a leak. To determine if your building has a leak note the water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same then the building most likely has a leak.

Leaky Faucets

Issue: Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

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Fix: Examine faucet gaskets and pipe fittings for any water on the outside of the pipe to check for surface leaks. Old and worn faucet washers and gaskets frequently cause leaks.

Leaky Toilets

Issue: A leaky toilet can waste about 200 gallons of water every day.

Fix: To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak. Frequently the culprit of a toilet leak is an old or worn out toilet flapper or valve seal. Replacing the valve seal is quick and easy. It's a good idea to bring the old flapper to the hardware store to ensure the new flapper fits your toilet model or consult the owner's manual.

Showering

Issue: A full bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

Fix: If you take a bath, stopper the drain immediately and adjust the temperature as you fill the tub.

Leaky Showerheads

Issue: A leaky showerhead that drips at the rate of one drip per second can waste more than 3,000 gallons of water each year.

Fix: Some leaky showerheads can be fixed by using pipe tape, or Teflon tape, to ensure the connection between the showerhead and the pipe stem is tight.

Watering Wisely

Issue: The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

Fix: Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to savings of at least \$1,150! Check the garden hose or in-ground irrigation system each spring before use to make sure it wasn't damaged by frost or freezing. If the connection from the hose to the spigot leaks replace the nylon or rubber hose washer to ensure a tight connection.

Washing Wisely

Issue: The average washing machine uses about 41 gallons of water per load.

Fix: High-efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

Flushing Wisely

Issue: If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.

Fix: New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts. Compared to 3.5 gallons per flush toilet, a WaterSense labeled toilet could save a family of four more than \$90 annually on their water bill, and \$2,000 over the lifetime of the toilet.

Dish Washing Wisely

Issue: Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.

Fix: Run the dishwasher only when it's full and use the rinse-and-hold dishwasher feature until you're ready to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

APPENDIX C: END-USER WATER SAVINGS

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Verdi Business Co-op Water Conservation Plan

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Estimated water savings from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-4):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
Pressure management	Governmental building (indoors)	5 %
	Pressure reduction, system	3 – 6 % of total production
Outdoor water use efficiency	Pressure-reducing valves, residential	5 – 30%
	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
Replacements and promotions	Irrigation timer	10 gpcpd
	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
	Dishwashers, residential	1 gpcpd
Water-use regulation	Hot water demand units	10 gpcpd
	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd